

- 15 -

## PATENT CLAIMS

1. An optical plug-in connection, comprising an optical plug-in connector (10, 10', 35, 45) and a coupling (24), into which the plug-in connector (10, 10', 35, 45) can be inserted, and also unlockable locking means (14, 15, 17; 37, 38, 39; 41, 42, 43, 44, 47), which effect locking of the plug-in connector (10, 10', 35, 45) in the coupling (24) when the plug-in connector (10, 10', 35, 45) is inserted into the coupling (24), characterized in that the locking means (14, 15, 17; 37, 38, 39; 41, 42, 43, 44, 47) are formed in such a way that they cannot be unintentionally unlocked when in the locked state.
2. The plug-in connection as claimed in claim 1, characterized in that the locking means (14, 15, 17; 37, 38, 39; 41, 42, 43, 44, 47) are formed in such a way that, when in the locked state, they can only be unlocked by use of a separate tool (27).
3. The plug-in connection as claimed in claim 2, characterized in that the locking means comprise a flexibly bendable locking arm (14, 38, 42) which is provided with a locking element (15, 39, 44) at its free end and, bending in a flexible manner when the plug-in connector (10, 10', 35, 45) is inserted into the coupling (24), locks the plug-in connector (10, 10', 35, 45) in the coupling (24) and can be unlocked by renewed flexible bending.
4. The plug-in connection as claimed in claim 3, characterized in that the locking arm (14, 38, 42) is arranged on the plug-in connector (10, 10', 35, 45).

5. The plug-in connection as claimed in claim 4, characterized in that a locking element (17, 32, 47) which can be moved back and forth by means of a tool (27) between a first position, in which the locking arm (14) can be flexibly bent largely unhindered, and a second position, in which the locking arm (14) is hindered from flexible bending by the locking element (17, 32), is provided on the plug-in connector (10, 10').
6. The plug-in connection as claimed in claim 5, characterized in that the locking arm (14) extends parallel to and at a distance from the housing (11) of the plug-in connector (10, 10'), in that the locking arm (14) is flexibly bent toward the housing (11) of the plug-in connector (10, 10') for locking and unlocking, and in that the locking element (17, 32, 47) is arranged between the locking arm (14) and the housing (11) of the plug-in connector (10, 10').
7. The plug-in connection as claimed in claim 6, characterized in that the locking element (17, 32, 47) can be removed when the locking arm (14) is bent away outward from the housing (11) of the plug-in connector (10, 10').
8. The plug-in connector as claimed in claim 6 or 7, characterized in that the locking element (17, 47) is displaceable parallel to the locking arm (14) between the first position and the second position.
9. The plug-in connection as claimed in claim 8, characterized in that the locking element (17, 47) is guided in the longitudinal direction by means of a guiding rail (22) and a guiding groove (19) or a guiding slot (51).

- 17 -

10. The plug-in connection as claimed in one of claims 7 to 9, characterized in that the locking element (17, 47) has protuberances (20) or lugs (52, 53), which protrude laterally beyond the locking arm (14) and on which a tool (27) formed in the manner of a fork can act for displacing the locking element (17).
11. The plug-in connection as claimed in one of claims 7 to 10, characterized in that the coupling (24) is formed as a duplex coupling for the simultaneous insertion of two plug-in connectors, and in that the locking elements (17) can be displaced simultaneously by means of the tool (27).
12. The plug-in connection as claimed in claim 6 or 7, characterized in that the locking element (32) is pivotable between the first position and the second position about an axis perpendicular to the locking arm (10').
13. The plug-in connection as claimed in claim 12, characterized in that the locking arm (14) has arranged in it a clearance (34) which at least partly receives the locking element (32) during the flexible bending of the locking arm (14) when it is located in the first position, but cannot receive the locking element (32) when it is located in the second position.
14. The plug-in connection as claimed in either of claims 12 and 13, characterized in that it is only possible for the locking element (32) to be pivoted by means of a tool, in particular in the form of a screwdriver.
15. The plug-in connection as claimed in claim 4, characterized in that the locking arm (38, 42) can

- 18 -

5 be flexibly bent by a formed-on unlocking lever (37, 41), and in that the unlocking lever (37, 41) is chosen to be so short in its length that, when the plug-in connector (35, 45) is inserted in the coupling, it can only be actuated from the outside by means of a tool.

10 16. The plug-in connection as claimed in claim 15, characterized in that the unlocking lever (37) is formed on the locking arm (38) in its final length.

15 17. The plug-in connection as claimed in claim 15, characterized in that the unlocking lever (41) is formed on the locking arm (42) in a length exceeding the final length and can be shortened to the final length at a predetermined breaking point (43).

20 18. The plug-in connection as claimed in claim 10, characterized in that the locking element (17) is produced from a plastic as a solid part.

25 19. The plug-in connection as claimed in claim 10, characterized in that the locking element (47) is formed as a bent sheet-metal part.

30 20. The plug-in connection as claimed in claim 19, characterized in that the locking element (47) is bent in a V-shaped manner, with a spring arm (48) as one leg of the "V" and two parallel supporting arms (49, 50), between which a guiding slot (51) is arranged, as the other leg of the "V".

35 21. The plug-in connection as claimed in claim 20, characterized in that two laterally protruding lugs (52, 53) for a tool (27) to act on are formed on the locking element (47) at the vertex of the "V".